Progress Report No. 4
Wetlands Ecology, SR 140
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A. Title: ERTS-1 Data User Investigation of Wetland Ecology, SR 140.

B. Principal Investigator: Dr. Richard R. Anderson, The American University, UN-006.

C. ERTS-1 data over the South Carolina test site (Charleston area) are not being routinely sent out. Those data of this are which have been received were ordered retrospectively and received during January 1973. Due to the lack of data in the South Carolina area, wetlands to the south in Georgia are being analyzed, as a substitute test site. Color infrared, U-2 photography have been received for this area, flown in August 1972. At this date we have not received approval of our Data Analysis Plan submitted December 14, 1972. According to the University contract we are not to proceed with the following 14 months of data analysis. We would appreciate hearing from the appropriate persons as soon as possible.

D. Accomplishments during December and January include:

1. Continued processing of spectral reflectance data using a recently operational computer program. A computer program for plotting spectral reflectance curves is not yet operational at this time as had been previously planned.

2. Development of a capability to produce color composites of ERTS imagery using the Diazo color subtractive process.

3. ERTS-1 data has been reprocessed to bring out detail in wetlands. Three approximate scales (1/1,000,000, 1/125,000 and 1/24,000) have been analyzed in Chesapeake Bay, Maryland and Savannah, Georgia. The following have been determined from each of the scales (frames 1079-15140 and 1046-15324):

   A. Scale 1/1,000,000 (as delivered from Goddard)
      1. Marsh-water interface and upper wetland boundary.
      2. Large plant communities, 100 M and above, including Spartina alterniflora, Spartina patens and Spartina cynosuroides; also Juncus roemerianus and Typha spp.
      3. Tree islands down to 160 meters and small streams to 16 M wide.
   B. Scale 1/125,000 (reprocessed to a negative and enlarged)
      1. Marsh-water interface and upper wetland boundary, and successional zones clearly shown.
      2. Smaller communities (less than 25 M in some cases) of of the above listed species.

3. Open (non-vegetated) ditches dug for drainage and agriculture.

C. Scale 1/24,000

1. All boundaries seen in other scales become blurred. It appears that this scale may be useful for some theme extractions such as upland, dry marsh, wet marsh and open water where placing of boundaries is not critical.

E. Aircraft Data Support

1. The aircraft support to this point has been very adequate, providing badly needed reference data over our southern test site (N.C. and S.C.). A request will be made to narrow the flight line coverage to the coastal area only and extend the flight line to include a portion of the Georgia coastline where a test site has been established.

2. The data products are now being provided in a timely fashion. This was not true of the early portion of the project. It was necessary to take field trips to the southern test sites without the underflight data as a reference. The latest color IR data over the southern test area are excellent and much appreciated.

3. The aircraft data are being used in the following ways:
   a. Reference to acquaint the investigators with specific geographical features in an unfamiliar area.

   b. Interpretation of gray levels in ERTS imagery through matching with color tones on color IR photography. This is particularly important in the southern test area where vegetational conditions are different than in the Chesapeake Bay test site.

F. Plans for next reporting period

1. Continue to investigate processing techniques for optimum presentation of ERTS data for wetland ecology.

2. Present paper at Goddard during March.

3. Present paper at University of Tennessee latter part of March.

4. Travel to Houston to take part in meeting to determine best methods for interpreting data from the C130 Multispectral Scanner.

5. Travel to southern test site to obtain field information.